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## **BIOLOGY IS DESTINY ONLY IF WE IGNORE IT**

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Abstract: Problems of sustainability and survivability are best met not with moralizing but with policies that take advantage of our increasingly understood evolved human psychology. This knowledge helps us understand why our problems recur, and why we need not expect them to have permanent solutions. What is needed is an *evolutionary praxis*. It is possible, for example, to create policies that *work around* our tendencies to hierarchize and to form into ethnocentric and mutually hostile groups. While in many ways there may be a mismatch between our evolved human nature and contemporary society, the fact that it is we who construct our environments makes it easy to exaggerate the extent of mismatch.

Key words: evolutionary psychology; mismatch theory; social policy; hierarchizing; work-around; ethnocentrism

It is deeply satisfying to point out how human stupidity, greed, carelessness and irresponsibility are the real causes of our problems. Countless popular books and newspaper columns and editorials have had at their core Victorian moral earnestness

combined with astonishment over the folly of our fellows. But there is another Victorian discourse that, ultimately, is both more satisfying and potentially more effective than any rhetoric of virtue and its lack: the discourse of Charles Darwin and of human evolution. No doubt, seeking moral causes and cures for today's problems of survivability and sustainability is unavoidable, but perhaps not as productive as one might wish. It is time to try the Darwinian perspective, which presents our problems not as products of moral imperfection but of an evolved psychology, one better suited for the environments of our ancestors than for those in which we now find ourselves but which nonetheless underlies our societies and institutions.

Darwin taught us that our species is the product of biological evolution, and that evolution by natural selection is a process of unintelligent design. That is, evolution is a blind process conceptually similar to the blind processes that cause the molecules of crystals to align themselves in perfect order or the pebbles of a stream bed to be sorted by the rushing of water. As the philosopher Daniel Dennett (1995) has so lucidly explained, Darwinian evolution is algorithmic, a matter of differential survival and reproduction. Given a surplus of offspring and given that they differ somewhat from one another, in any specified environment some individuals are more likely to survive and reproduce than are others. Offspring resemble their parents. Whichever variations make individuals slightly more likely to survive and reproduce than others will therefore be more common in the next generation. If the environment that led to selection of these attributes remains reasonably constant then, from generation to generation, these traits will become more frequent in the species and observers may call the accumulating changes "evolution by

natural selection." However, the products of this process have at least three unfortunate imperfections.

First, it is apparent that a species is primarily adapted only to past environments. Adaptation to current environment can depend on the extent to which it resembles that of the past. Evolution looks backward, not forward. Traits do not evolve because they might some day be useful but only because they are, in each generation, already useful. True, as environments change so too do selection pressures, and traits may change their function, but this process is always slow. For most of human evolutionary history we lived in small, competing bands of people who gathered and hunted. True, we did not suddenly settle down to become farmers some 10,000 years ago, as was once believed - we now understand that both before and after that time, where there were stable sources of food, such as shellfish or salmon, we developed complex sedentary societies that were nevertheless based on hunting and gathering. We also realize now that we domesticated plants well before we became full-time farmers (Price and Gebauer 1995, Tudge 1999). Since the cultivation of crops and domestication of livestock became widespread, some 10 to 14 thousand years ago, most of our species has become sedentary. However, given that our species is at least 100,000 years old, it seems very likely that we are better adapted to the older range of past environments than to our more recent agricultural-industrial-urban ways of life. (Of course, as will be discussed subsequently, we construct our own environments and many of their features may well reproduce aspects of past environments (Laland, Odling-Smee, and Feldman 2001).)

Second, there is no implication here that evolution produces perfect biological

machines. An organism does not need to be perfect to survive and reproduce, it needs only to be slightly less poorly adapted to its environment than are other members of its species. At no point in the history of *Homo sapiens*, therefore, is there any reason to believe that we were perfect creatures in perfect harmony either with our environments or with one another. Knowledge of our past may be invaluable for understanding the present and for planning the future but there is no returning to a golden age that never was.

Third, evolution compromises (Simpson 1965). For example, genes have multiple effects (pleiotropy) and the final frequency in the gene pool of any particular gene is a sort of resultant of forces. Thus, evolutionists explain senescence -- why we grow old -- - as in part due to the likelihood that some of the genes that early in life make us better competitors against others in having offspring, later on have other effects that are deleterious (Rose 1991). Similarly, large body size may make us better competitors in physical violence and permit us to birth bigger, more mature babies but, when food is in short supply, it puts us at greater risk of malnourishment. Both the rate at which humans age and size of our bodies are thus evolutionary compromises, not products of a process of perfection.

In recent years, evolutionists have turned their attention to human psychology and society. Various labels have been applied to their efforts -- human sociobiology, behavioral ecology, evolutionary psychology, and so forth. But these controversies over nomenclature are minor compared to those involving the legitimacy and even honorability of applying Darwin to human behavior (Seegerstråle 2000). After all, the 20<sup>th</sup> century and even the 21<sup>st</sup> have seen much evil justified by a pseudo-biology and a false

genetics, and the danger of mis-use of Darwin by those who seek to rationalize their claims of group exclusivity and superiority remains real. No doubt it is these history-based fears that have permitted the last of the centrisms, species-centrism, to remain respectable in at least some circles (particularly those of the social sciences).

Ours, however, is an age of biology, a period in which genomics and proteomics have replaced particle physics as the expensive big science glamor fields, a time when the brain and consciousness are beginning to be understood and biomedicine looms large in public consciousness. Our time is also one in which concern for the environment and biodiversity is growing and in which much of the public (at least, the reading public) is prepared to accept, finally, that human beings are part of the natural order. People who are vegans for ethical reasons or who take James Lovelock's Gaia hypothesis (Bunyard 1996, Lovelock 1987) seriously are likely to agree that the Darwinian theories that have proven themselves so powerful for every other animal species must now be applied to our own. (The question, of course, is just how they are to be applied.)

These are still early days for the Darwinian understanding of human nature. Readers interested in this field may consult numerous works, including (Alcock 2001; Barkow n.d., 1989; Barkow, Cosmides, and Tooby 1992; Buss 1999, Crawford and Krebs 1998; Dawkins 1996; and Miller 2000). They will find much that is incomplete, much that is disputed. No doubt in the next half century evolutionists will develop a firmly-grounded consensus about our evolved human nature, providing a solid foundation for those concerned with social policy. Unfortunately, questions of survivability and sustainability will not wait 50 years: what follows is some of what I believe the future

consensus about human evolved psychology will include. It is, at least, consistent with current literature.

Those who cannot remember the past are condemned to repeat it," goes George Santayana's famous adage. But the saying only serves to give us false hope: remembering the past and its container pier of grievances is often more likely to provoke than prevent conflict. Of course the study of history is useful but without an understanding of human nature there is absolutely no evidence that it enables us to avoid the repetition of error - much conflict has been based on past grievances, after all. Combining our study of history with an analysis of our evolved human nature therefore seems worth trying. Human nature, however, covers much ground, and this brief paper must perforce be selective. The aspects of our evolved human nature discussed below were chosen because they illustrate why challenges to sustainability and survivability *recur*. Other choices could easily have been made.

Warning: No assumption is being made here that awareness of human nature somehow alters it or permits us to transcend it. It is hoped only that knowledge of ourselves will permit the development of social policies that more effectively achieve our shared goals, goals having to do with the sustainability of human endeavors and the survival of human societies.

### **Ethnocentrism**

I use *ethnocentrism* here in a very broad manner, to cover the general tendency for us to form into in-groups and out-groups. The phenomenon has been studied by many social psychologists and other scholars, including a number of evolutionists (see, for

example, Barkow 1989; Campbell 1965; Hirschfeld 1996; Irwin 1987; Kurzban, Tooby, and Cosmides 2001; LeVine and Campbell 1972; Lockard 1980; Reynolds, Falger, and Vine 1987; Rieber 1991; Shaw and Wong 1988; Thienpont and Cliquet 1999; Van Den Berghe 1986). Human beings everywhere form bands or cliques or communities - in-groups - whose members see themselves as different from and superior to comparable bands or cliques. In extreme cases, only members of the in-group are considered human and out-group members are accordingly dehumanized: the norms of ethical conduct applied to relations with other in-group members are often not applied to outsiders, who may be cheated or even killed. Even when out-group members are considered human, the intrinsic superiority of the in-group is seldom questioned. Anything may count as a marker of group membership and a maintainer of group boundaries: language, accent, hairstyle, religious belief, skin color, food preferences, etc. The peoples of different countries may be ethnocentric, but students in high schools also form themselves into antagonistic, rivalrous membership groups, while the different divisions of a large corporation may work to sabotage one another's efforts and government departments may deliberately withhold vital information from one another. The social causes and consequences of these various forms of ethnocentrism obviously differ but parsimony suggests that they share the same evolutionary psychology, the same evolved mechanisms.

In modern, complex societies, individuals may have numerous affiliations each of which can potentially serve as a group membership marker. Some affiliations are ascribed by birth - particularly those involving ethnicity - but many others are achieved (e.g.,

occupational status, educational status, taste in entertainment status, etc.). Would-be leaders work to persuade potential followers that the membership they allegedly share is paramount, overweaning, and all other affiliations either secondary or spurious. Leaders speak in we terms: we women, we men, we Canadians, we stamp collectors, we persons living with HIV/AIDS, we members of our labor union, we senior corporate executives, we believers in the true religion, we honest working people, we golfers, and so forth.

In-groups generate solidarity through perceived external threat. Historically, numerous political leaders have promoted or taken advantage of wars in order to provide such threat and to benefit from the evolved responses of clustering around the leader and the suppression of dissent. War-time leaders enjoy the kind of support they can only dream of in time of peace (e.g., Winston Churchill, immensely popular in Great Britain during World War II, with the return of peace was voted out of office). Metaphorical wars are constantly invoked by leaders in an effort to release ethnocentrism's collective solidarity mechanism: wars against crime, poverty, cancer, etc. The typical seeker of leadership usually makes a generic speech: We are all members of a great in-group with a great history and this status should be paramount in our minds; but our in-group is threatened by rival external groups and/or internal factions notable for their moral inferiority and lack of respect for us. Part of our parlous situation is due to the errors of former leaders. But rally around me and I will lead you to establish/re-establish the primacy that is naturally and deservedly ours. Out-groups are generally stereotyped and vilified and perceived by in-group members as much more different from in-group

members and more internally coherent, cooperative, and powerful than they in fact are.

Numerous historical and social psychological factors influence how and when the ethnocentrism mechanism is triggered and who benefits from it. The mechanism is a double-edged sword in that it tends to increase within-group cooperation at the cost of fomenting conflict with rival groups. But in the absence of strong external threats, in-groups tend to dissolve into segments each of which takes one or more of the others as the rival, the threat. From this perspective, world peace would be much easier to achieve if we were all convinced of an extraterrestrial threat, e.g., a comet heading towards Earth, or hostile aliens.

The ethnocentrism response reflects the evolution of our species, which possibly was speeded by a population structure involving small, genetically semi-isolated bands often in conflict with one another. Such a scenario, though somewhat speculative, would explain why the trait would in the past have been been adaptive (Barkow 1989, 2000a). Whatever its origins, however, there is little doubt that the tendency towards the various kinds of ethnocentrism is a pan-human trait intimately involved both with the constant group conflict and the spates of in-group cooperation that typify our species.

Can an ethnocentrism-prone species survive in an era of cheap bioweaponry and other weapons of mass destruction, and in which modern transportation and communication mean that even groups vast distances away from one another can perceive each other as threats? The moral solution of condemning the more destructive of the ethnocentrism is necessary but historically has never been sufficient. Seeking symbolic means of expressing ethnocentrism which do not involve visiting violence physical or

psychological upon the other is often suggested and is no doubt also worth doing: however, it should be noted that the Berlin Olympics of 1936 did nothing to prevent World War II. The approach of educating our children to ignore the in-group/out-group distinction is probably unworkable, for human beings create group markers and boundaries much faster than they can be dissolved. However, emphasizing the situational nature of group membership and taking advantage of the multiplicity of in-groups to which we belong might be effective. When in-groups have overlapping memberships and their relative salience is largely situational it becomes more difficult for would-be leaders to persuade members to act violently against out-groups. Cross-cutting ties helped to contain violence in many pre-colonial African societies, for example (Gluckman 1955).

One of the most pernicious forms of ethnocentrism is the type known as racism. Interestingly, the evolutionary psychologist Robert Kurzban (Kurzban and Leary 2001; Kurzban, Tooby, and Cosmides 2001) finds that there is nothing inevitable about racism, per se: while our evolved cognitive machinery can lead us to use race to classify another as being a member of a competing coalitional affiliation, cues that signify that the other is indeed a member of our own alliance can take precedence. In other words, while our tendency to form in-groups and out-groups may be a deeply embedded aspect of our evolutionary psychology, this does not mean that any particular form of ethnocentrism, including and especially racism, is inescapable. That racism or ethnocentrism is part of our evolved human nature does not imply that the recurring calamities associated with them are inevitable: solutions are always possible, though they will presumably have to be perpetually reinvented..

## **Hierarchizing**

If ethnocentrism is associated with group conflict, the tendency to seek social rank higher than that of others - hierarchizing - is linked to individual conflict.

Human beings seek social rank, a fact that does not seem to be in dispute (Barkow 1975a; Frank 1985; Kalma 1991; Mealey 1985; Miller 1993; Moore 1993; Salzman 1999; Spiro 1996; Wiessner 1996; Wiessner and Schiefenhövel 1996). In hunter-gatherer societies, leveling (Boaz 2002; Boehm 1993, Boehm 1997, 2000) prevents the formation of obvious hierarchies - an individual who seeks dominance (alpha animal status) is automatically opposed by a coalition that deliberately denies him or her deference. Social rank in these societies is therefore subtle and a product of personal qualities. For this reason, and because there can be little accumulation of material goods among people who move frequently and carry their belongings with them, hunter-gatherers generally do not have hereditary rank and wealth (with the exception of those who exploit a stationary, recurring resource, such as the salmon of the Pacific Northwest Coast of North America). However, once we look at societies that domesticate plants and animals we quickly see social hierarchy, often featuring massive social inequality. The implication is that although the tendency to hierarchize is indeed part of our evolutionary psychology, until relatively recently in our history this tendency did not create marked social inequality, social stratification, or despotism (Boehm 2000). In short, hierarchizing does not necessarily generate hierarchy.

As individuals, our preoccupation with our relative standing seems to lead to a constant concern with managing the impressions others have of us, both minute-by-

minute and in terms of our general reputation in our group (Barkow 1989; Goffman 1959, 1967). Some of us are more skilled in reputation management than are others. Note, however, that social standing among human beings (and among chimpanzees and bonobos) is not primarily a matter of aggression or physical dominance but involves political skill in coalition and support-building. Note, too, that logically not everyone can be at the top of a hierarchy, and that our efforts to raise our own standing would appear necessarily to involve lowering that of others. However, our complex societies have numerous sets of criteria for the evaluation of relative standing. We can and often do choose a set of criteria in terms of which we personally can rank ourselves high, disregarding the fact that others may be using different criteria and in fact are ranking us as lower than themselves (Barkow 1975,1989). (Friendship often seems to have a component of hiding one's self-assessed higher rank from the other.<sup>1</sup>)

Social scientists have tended to consider as economic many conflicts that, in fact, are about relative standing. From an evolutionary perspective, wealth is important in only two situations: when it is taken as an indicator of relative standing, and when we are dealing with such extreme poverty that differences in wealth affect whether one can care for oneself and one's family. Labor relations, for example, often have to do with symbolic markers of esteem and respect, and not simply salaries or job security. Even the economist's notion of physical capital has been broadened by sociologists, who now recognize the importance to social standing of both cultural capital (the kind of knowledge children of university professors, for example, acquire from their parents); and social capital (the network of cooperative relationships that can confer competitive

advantage (Bourdieu and Passeron 1990; Fowler 1997). This expanded conception of capital is much more in equipping with the evolutionist's emphasis on relative standing and reputation than is the older, narrower notion of capital.

Though hierarchizing behavior certainly can lead to recurring problems, such as bullying and damage to self-esteem, would we really wish to end all human interpersonal competition? After all, as many analysts have concluded, competition and conflict frequently lead to cooperation (see, for example, Axelrod 1984; Axelrod and Dion 1988; Ridley 1998). Thus, a goal of minimizing the damage hierarchizing can do and maximizing its benefits for self-esteem and cooperation would appear to be a more sensible course. Fortunately, the world has not been simply waiting for evolutionists to appear on the scene in order to optimize the effects of conflict. There is, for example, an insightful academic specialization in conflict resolution (e.g., Deutsch and Coleman 2000). The findings and techniques of this very empirical field, as one would expect, appear to be quite compatible with what evolutionists now understand of our evolved human nature.

### **Lack of Match with Present Environment**

To what extent do problems of survivability and sustainability reflect a *mismatch* between the environments to which evolution has adapted us and our present environments? Is modern society like an old-fashioned zoo and we the animals locked in a world that was never made for us? The attractiveness of this argument is equal only to its simplicity.

Laland, Odling-Smee and Feldman) (2000a, 2000b, 2001) have emphasized that

we (and other species) *construct* much of our environment. Given that we everywhere have largely identical, evolution-produced brains, and given that physical reality imposes constraints on the possible, these constructed environments are doubtless much more similar to those of our ancestors than we might imagine (Barkow 2000b). After all, today's human cultures and societies have numerous universal characteristics (Brown 1991, Barkow 2001), a fact many of us have learned to ignore because of the powerful bias in the ethnographic literature towards exoticizing the other by focusing on what largely Western ethnographers have found unfamiliar. Crawford (1998), in his valuable discussion of mismatch theory and ancestral environments, goes so far as to argue for *ancestralization*, defined as the tendency for us to return to ancestral ways of behaving once the ecological pressures which had caused a society to move away from its ancestral form have been relaxed (p. 292). Perhaps there are key ways in which our lived experience of post-industrial society is closer to that of our distant hunting-gathering forbears than to that of our more recent agricultural ancestors. For example, on the one hand the scale of our urban environments is vastly greater than that of any hunter-gatherer society, on the other we seem to filter out unfamiliar places and people as we go about our daily lives, reducing our experienced environments to a more Pleistocene scope.

Nevertheless, there are numerous ways in which a mismatch between current and past environments may indeed be creating unhappiness and even pathology, both at the individual and societal level. John Bowlby (1969), for example, arguably founded mismatch theory when he reasoned that the hospitals and nurseries of his time were far from our environment of evolutionary adaptedness and were interfering with the

bonding of mother and infant, possibly creating subsequent pathologies of attachment behavior. But mismatch theory has been chiefly applied in the fields of nutrition and medicine. There is at least some evidence and considerable argument that industrial food and grass-fed cattle are at least in part responsible for many of the ills of our time (including obesity, cardiovascular disease, and type 2 diabetes), and that the healthy diet is a Paleo[lithic] diet (e.g., Abrame 1979; Burkitt and Eaton 1989; Cordain et al. 2002; Crawford and Marsh 1995; Eaton 1992; Eaton et al. 1994; Eaton, Shostak, and Konner 1988). Mismatch theory is a core component of the young field of Darwinian medicine, which seeks to understand the relationship between disease and evolutionary biology. See, for example, Boaz (2002), Charlton (1997), (Fabrega) 1997, Haig (1993), Lappé 1994, Nesse and Williams 1994, Nesse and Williams 1998, Stearns 1998, Trevathan, Smith, and McKenna 1999, Wallman 1994, Williams and Nesse 1991, Williams and Nesse 1990). The study of psychopathology, in particular, is in the process of being rethought from an evolutionary perspective (e.g., (Bailey 2000, Bailey and Gilbert 2000, Bailey and Wood 1998, Baron-Cohen 1997, Charleton 2000, Gilbert and Bailey 2000a, Gilbert and Bailey 2000b, Gilbert, McGuire, and Bailey 2000, McGuire and Troisi 1998, Nesse 2000, Pani 2000).

Mismatch theory seems particularly pertinent when we compare the dangers and risks we face with those experienced by our Pleistocene ancestors. Our bodies and brains are well-adapted to cope with, for example, Pleistocene fauna. Our famous fight-or-flee physiology interrupts extraneous cognition and prepares our bodies to face physical danger. Threatened by a saber-toothed tiger (smilodon), it would presumably have been

adaptive to flee, freeze; or possibly to fight (Barkow 1989). A scream of terror would have alerted other members of our group to danger, either bringing aid or at least permitting them (including relatives carrying copies of our genes) to escape. But note that these risks are all short-term.

Many of the risks of modern society are both long-term and evolutionarily novel. There are the health risks of alcohol and tobacco and unsafe sex and an industrial food diet, and the dangers of travel by automobile and airplane, for example. Today's risks are often ill-defined and collective rather than personal, as with problems of climate change, loss of biodiversity, genetic modification of organisms, bioterrorism, economic downturns, the spread of nuclear weapons, and so forth. There is a considerable literature on how we assess such risks (e.g., (Flynn, Slovic, and Kunreuther 2001, Jaeger et al. 2001, Kahneman et al. 1982, Slovic 1999, Slovic 2000)): our decisions are not particularly rational but heavily emotional and political and are influenced by trust and its absence.

The readiness with which we can dismiss quite real but long-term risks (e.g., risks of overeating, smoking, etc.) strongly suggests a mismatch between our Pleistocene brains and current reality. Let us imagine for a moment that our ancestors had never faced predators or physical violence, but that now for the first time in our evolutionary history there were lions among us! We would not have already evolved specialized adaptive mechanisms to cope with imminent violence because this threat would be evolutionarily novel and evolution is about past wisdom: so how would we react? Why, we would form committees to discuss courses of action, create lobbies and interest groups favoring some solutions but not others; and after a couple of decades we would still be shaking our

heads over how many people were being devoured on our streets and blaming politicians for the problem. This is precisely the situation we are in with respect to today's risks: global warming is affecting us massively, we are destroying much of our planet's biodiversity, tens of millions die of HIV/AIDS—but the evolved mechanisms invoked are those having to do with coalitional politics and reputation, problems that our Pleistocene ancestors *would* have faced. Only when a vague collective worry becomes a short-term personal threat to ourselves or those close to us do we react with the force these problems merit, and then we discover that our unaffected neighbors are still shaking their heads and pointing fingers in behavior that seems to have more to do with reputation and impression management than coping with what now seems to us to be an obvious emergency. We become members of a concerned and activist minority, the ethnocentrism reaction kicks in and we enjoy a sense of moral superiority because we are now an in-group engaging in collective action, bemoaning the moral inferiority of those who do not realize that our house is on fire. But the moral stance, as this paper began by arguing, is not enough.

### **Work-arounds and a Praxis for Evolutionists**

*Praxis* is the Greek term for acting or action but it has come to mean a theoretically, philosophically, theologically, or politically informed action. In this context, by *praxis* is meant an *evolutionarily-informed practice*. The term *work-around* comes from evolutionists Peter Richerson and Robert Boyd (1999, 2001) (Richerson and Boyd 1999, Richerson and Boyd 2001). They write that "The work-around hypothesis asserts that social instincts are part building-blocks and part constraints on the evolution of

complex social systems (2002:208). (They use the term instincts rather than evolved psychology.) Richerson and Boyd explain how work-arounds achieve social cooperation in large and complex units. Thus, the German Army during World War II was a highly effective fighting force because of an astute implicit understanding of human evolved psychology on the part of the generals. Divisions were organized on a territorial basis so that the men fought alongside other men who came from their own region and spoke with their own dialect and accent. Training emphasized bonding and loyalty between soldiers, and officers were enjoined to look after the welfare of their men to the fullest extent possible. In effect, the German Army consisted of units that at an emotional level were the kind of small and homogeneous units in which our species evolved. The work-around consisted of a social organization in which a psychology evolved to defend one's own small band was channeled so it resulted in the support of the army of a highly aggressive modern state.

We need to consciously and deliberately work around our evolved psychology in order to solve our problems of survivability and sustainability. A moral stance is not enough. But there is no need for us to rely on a purely empirical approach to problem-solving (effective as it was for the Wehrmacht). Of course, because our evolved psychology is all there is to work with, experientially-derived work-arounds are already ubiquitous. Capitalism itself is in effect a work-around because capitalism rests on the channeling of social competition in the direction of resource acquisition and control. When ambitious people compete in such terms, capitalism flourishes and economies grow. When competition is channeled into religious knowledge and fervor it is religion

that grows (Barkow 1975b). The advertising industry massively exploits our evolved psychology to influence our behavior: the industry's size permits its largely empirical approach to be quite successful. To the extent that we do have groups working to solve our collective problems of survivability and sustainability, there are already empirically-based work-arounds in place. Surely, however, we could and should use our growing knowledge of evolutionary psychology to design work-arounds deliberately rather than relying on inefficient trial-and-error.

Our knowledge of human evolutionary psychology is rapidly growing: as it grows, so too does the potential for an evolutionary praxis involving creating work-arounds that meet our goals of sustainability and survivability. At the same time, mismatch theory gives us a valuable tool for understanding why we so often act collectively against our long-term interests, and why we as individuals so often act against our own future happiness and well-being. Meanwhile, evolutionary analyses of ethnocentrism and hierarchizing provide insight into both inter-personal and intergroup conflict. Yes, we do need to take a moral stance, and yes, we do need to study history: but we need to do both these things in the light of our evolved psychology, our human nature. Looking at ourselves with the evolutionist's gaze amounts, after all, to no more than restoring our species to the natural world.

Of course, this brief article has been more suggestive than substantive—it cannot substitute for a full-blown survey of evolutionary psychology and behavioral ecology and related fields. It has per force omitted major areas in which an evolutionary perspective can contribute to problem-solving, areas that include crime, the law, and governance (see,

for example, (Beckstrom 1993, Browne 1999, Browne 2002, Burgess and Draper 1989, Daly and Wilson 1998, Ellis and Walsh 2000) (Buss and Malamuth 1996, Harcourt and de Waal 1992, Low 1993, Masters 1990, Thornhill and Palmer 2000, Wrangham and Peterson 1996). Similarly, although the discussion did touch on the perception of risk literature it did not deal with the biases built into human thought by evolution and of the important roles of heuristics and bounded rationality in decision-making. (See, for example, Gigerenzer 2000:172-3; Kahneman, Slovic, and Tversky 1982; and Nisbett and Ross 1980). Because reference was frequently made to the need for understanding our moral judgments concerning problems of survivability and sustainability, the evolutionary literature on the basis of human morality is certainly relevant (e.g., Alexander 1993, Bateson 1989, De Waal 1996, Katz 2000, Nitecki and Nitecki 1993). Because human decisions are emotional in nature, an evolutionary understanding of emotion would appear to be essential (e.g., Damasio 1995, 2000; McGuire 1992; Nesse 1989, 2000; Tooby and Cosmides 1990). (Perhaps what is really needed is a reader, evolutionary psychology for policy-makers ).

Biology is not destiny unless we ignore it (Barkow 1989). If we take an exclusively moral stance then we make biology into destiny. If we take the perspective of an evolutionary praxis and use this understanding in crafting our policies, perhaps we can construct an enduring, sustainable way of life. Of course, as each new generation seeks to climb social hierarchies by demonstrating the superiority of their ideas and ways and plans over those of their elders, we will find that old solutions no longer work and new ones are necessary. An evolutionary praxis must involve, if not a permanent revolution

then at least a recurring one.

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## ENDNOTE

1. One of our most highly regarded social skills, at least in Western societies, is the ability to convince others that we are (a) of high social standing, but to convince others that we are (a) of regard the person we are talking regard the person we are talking regard the person we are important component of the skill-set often referred to as charm.